In the Claims

1. (CURRENTLY AMENDED) A heat exchanger to control the temperature of a process fluid in a reaction system comprising:

a reaction vessel containing the process fluid;

~~at least five~~ a plurality of heat transfer conduits around the circumference of said reaction vessel to provide a heat transfer surface between the heat transfer conduits and the reaction vessel;

wherein said ~~at least five~~ plurality of heat transfer conduits number from 10 to 200 and carry a flowing heat transfer fluid and no one of said 10 to 200 ~~at least five~~ heat transfer conduits carries more than twenty percent of the heat transfer fluid;

wherein each of said ~~at least five~~ 10 to 200 heat transfer conduits extends around the circumference of the reaction vessel and has a length of at most twice the circumference of said vessel and a cross-sectional area of less than ~~eighty~~ 500 square millimeters to, thereby minimize the heat transfer fluid that is supplied to each of said ~~at least five~~ 10 to 200 heat transfer conduits.

2. (ORIGINAL) A heat exchange according to claim 1 in which the time taken for the heat transfer fluid to pass through the heat exchanger as measured in seconds is not greater than twice length of the heat transfer surface when said length is measured in metres.

3. (CURRENTLY AMENDED) A heat exchanger according to claim 1 wherein each of said ~~at least five~~ 10 to 200 conduits has a cross sectional area for the flow path of less than ~~180~~ 500 square millimetres.

4. (CANCELED).

5. (CURRENTLY AMENDED) A heat exchanger according to claim 1 where the

total inventory of gas, liquid or solid to be heated or cooled within the vessel is less than 1000 litres.

6. (CURRENTLY AMENDED) A heat exchanger according to claim 1 where the heat transfer fluid is delivered in said ~~at least five~~ 10 to 200 heat transfer fluid conduits per 1000 litres of gas, liquid or solid to be heated where the total inventory of said gas, liquid or solid within the heat transfer device is greater than 1000 litres.

7. (canceled).

8. (canceled).

9. (PREVIOUSLY PRESENTED) A heat exchanger according to claim 1 wherein the linear velocity of the heat transfer fluid through the heat transfer conduit is between 0.5 and 5 $m.s^{-1}$ for liquid cooled systems when the heat exchanger is operating at full design load and between 2 and 20 $m.s^{-1}$ for gas cooled systems when the heat exchanger is operating at full design load.

10 -13. (canceled).

14. (PREVIOUSLY PRESENTED) A heat exchanger according to claim 1, whereby the heat transfer fluid flows within independent conduits which are not in direct contact with the gas, liquid or solid which is being heated or cooled and that the heat transfer fluid conduit is bonded, fused, glued, brazed, welded or soldered to the surface which serves as the containment barrier for the gas, liquid or solid which is being heated or cooled.

15-58. (canceled)

59. (WITHDRAWN) A heat exchanger according to claim 1 wherein the heat

transfer fluid conduit or conduits is held to the surface which serves as the containment barrier for the gas, liquid or solid which is being heated or cooled by means of clamps, springs, wires, natural shape of the conduit or some other form mechanical fixing and a layer of a soft, thermally conductive material such as conductive grease, fluid, conductive wool, fibrous conductive mat or a mixture thereof is provided between the transfer fluid conduit and the surface which serves as the containment barrier for the gas, liquid or solid which is being heated or cooled.

60. (WITHDRAWN) A heat exchanger according to claim 1 wherein the conduit for the heat transfer fluid is mounted on an expansion plate to permit independent movement of the heat transfer conduit in relation to the containment barrier for the gas, liquid or solid which is being heated or cooled.

61. (PREVIOUSLY PRESENTED) A heat exchanger according to claim 1 which uses a variable area heat transfer surface.

62. (PREVIOUSLY PRESENTED) A heat exchanger according to claim 1 in which the residence time of the heat transfer fluid is less than 6 seconds.

63. (WITHDRAWN) A heat transfer system for the transfer of heat between a process fluid and a heat transfer fluid across a heat transfer surface comprising a heat transfer conduit for passage of the heat transfer fluid attached to an expansion plate said expansion plate being in contact with the heat transfer surface said expansion plate enabling independent movement of the heat transfer conduit and the heat transfer surface.

64. (WITHDRAWN) A heat transfer system according to claim 63 wherein the heat transfer fluid is delivered in at least five heat transfer conduits each having a cross sectional area for the flow path of less than 2000 square millimetres wherein the linear velocity of the heat transfer fluid through the heat transfer conduits is from 0.5 to 20 $m.s^{-1}$ and adapted so that the temperature of the heat

transfer fluid changes by at least 1°C when they system is operating at full design load.

65. (WITHDRAWN) A heat transfer system according to claim 63 whereby the heat transfer fluid flows within independent conduits which are not in direct contact with the gas, liquid or solid which is being heated or cooled and that the heat transfer fluid conduit is bonded, fused, glued, brazed, welded or soldered to the surface which serves as the containment barrier for the gas, liquid or solid which is being heated or cooled.

66. (WITHDRAWN) A heat transfer system according to claim 63 where the heat transfer fluid flows within independent conduits which are not in direct contact with the gas, liquid or solid which is being heated or cooled and the heat transfer fluid conduit is held to the surface which serves as the containment barrier for the gas, liquid or solid which is being heated or cooled by means of clamps, springs, wires, natural shape of the conduit or some other form mechanical fixing and the gap between the heat transfer fluid conduit and the surface which serves as the containment barrier for the gas, liquid or solid which is being heated or cooled is filled by means of a soft, thermally conductive material such as conductive grease, fluid, conductive wool, fibrous conductive mat or a composite of several of these materials.